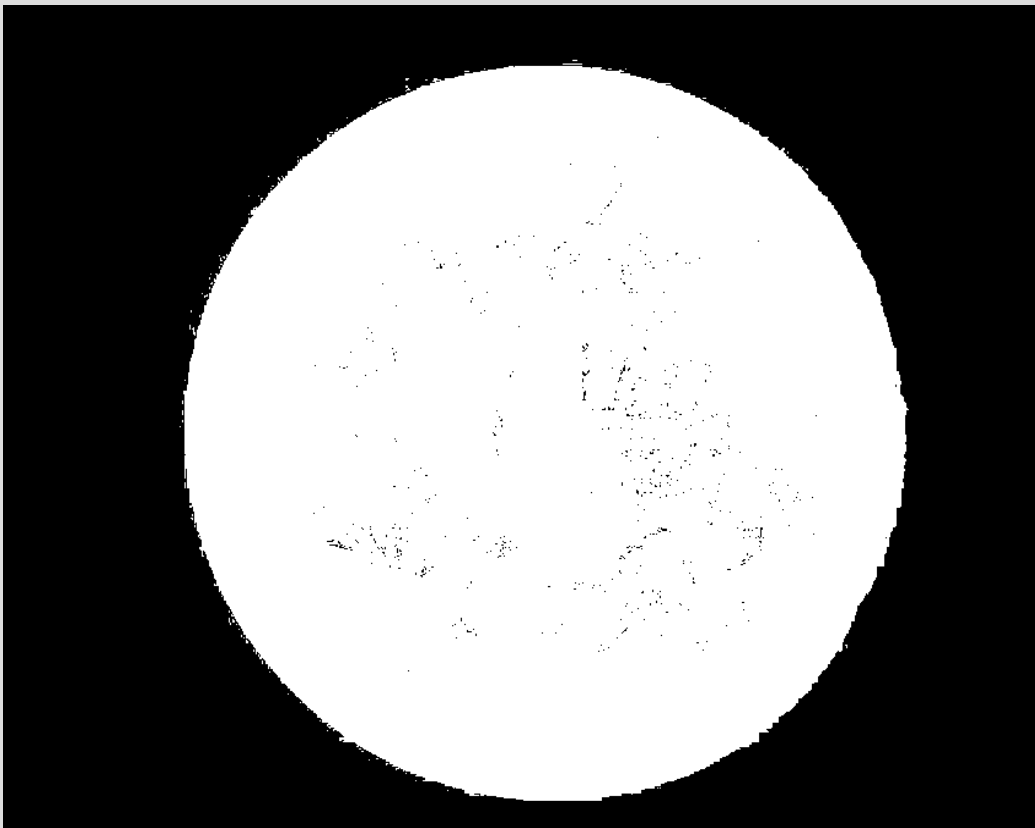
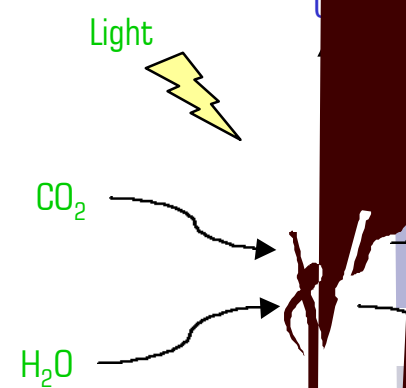


Basic Biological Factors of Soil Carbon and Nitrogen



Carbon is essential
nutrients and energy



- Plants take up inorganic nitrogen (NH_4^+ , NO_3^-).
- At harvest, nitrogen may leave the farm in commodities or can be returned if livestock consume the crops and the manure is returned to the fields.
- Precipitation adds small amounts of nitrogen to the soil.
- N_2 gas in the atmosphere is converted to NH_4^+ by chemical and biological processes (nitrogen fixation).
- Crop residues and green and animal manures contain organic N.

- The conversion of organic N to inorganic N is mineralization.
- The opposite of mineralization is immobilization.
- Nitrification is the conversion of NH_3 (ammonia) to NO_3^- (nitrate), carried out by two microorganisms -- Nitrosomonas and Nitrobacter.
- Ammonia can be volatilized (turned to gas) and lost to the atmosphere.
- When NO_3^- is converted to nitrous oxide, it is called denitrification.
- Nitrate is mobile in soil and therefore easily leached.
- Erosion and runoff remove N from the agricultural field.